

#### ABSTRACT OF THE DISCLOSURE

An electro thermal fluidized bed furnace is adapted to be used in a process for continuously heat treating of fine particulate matter, such as carbon black material, by continuously introducing a non-reactive fluidizing gas through the nozzles of the furnace at a pre-determined rate, continuously introducing untreated carbon black material through the feed pipe of the furnace at a predetermined rate so that it forms a fluidized bed, energizing the electrode so as to heat the fluidized bed, and continuously collecting the treated carbon black from the discharge pipe. The carbon black collected from the discharge pipe exhibits properties of having the PAHs and sulfur removed, the carbon black has been graphitized, the moisture pick-up by the carbon black has been eliminated and the carbon black is more oxidation resistant, Furthermore, the resultant furnace carbon blacks have a particle size of 7-100nm and an oil absorption number of 50-300 ml/100g., while the thermal blacks have a particle size of 200-500 nm and an oil absorption number of less than 50 ml/100g. All of these properties result in thermally modified carbon blacks having such properties and of such purity so as to provide improved performance properties in food contact type applications, moisture cured polymer systems, zinc-carbon dry cell battery applications, and semi-conductive wire and cable applications.

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